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Proposed is a model for basic preconditions for "the design of effective programs in developmental learning." Such a program should include (1) a continuous psychocognitive diagnosis and assessment of each child; (2) a structured, coherent, sequential approach to content area; (3) a focus on symbolic manipulation and the essentials of a concept; and (4) active, physical manipulation of materials. For disadvantaged children in particular, the social psychological setting within the classroom is important, i.e., small group learning situations which also enable interaction with the peer reference group. (NH)

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THE DESIGN OF EARLY DEVELOPMENTAL LEARNING PROGRAMS FOR DISADVANTAGED YOUNG CHILDREN

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William Fowler*

The concept of social disadvantage has served a useful purpose in capturing the popular imagination and energy in remedying social injustices to the poor. However, this concept can be used as no more than a crude guide in designing educational programs for the children of the poor. While there are a number of personality and intellectual problems that appear more frequently in children of the lower working class than in children of the more socially and economically advantaged classes, the problems appear in different combinations in different children. They are, moreover, not limited to this group of children. Personality traits such as apathy, withdrawal, hyperactivity and low impulse-control; and intellectual difficulties, including general and specific cognitive and language deficiencies; and perceptuo-cognitive diffuseness are to be found in nearly all populations of children. But it is not simply in the presence of this or that developmental deficiency, however severe, that the sole or even the major obstacle to designing effective learning programs for disadvantaged children lies. The main problem is the general lack of knowledge about how to define and implement an adequate learning situation.

In general, there are two ways of perceiving and explaining a child's behavior. We can attempt to explain his actions either by his past history or by his present social situation. In the former approach, attention is focused on the intellectual and personality characteristics a child is assumed to have developed from the interaction of biology with his past experience. The alternative orientation, developed by the late social psychologists Kurt Lewin[1] and Harry S. Sullivan,[2] accounts for his actions not only in terms of his traits, but also by his current total social circumstances. In other words, it is assumed that a child behaves and learns as much according to how he is treated as he does by the personality he brings to a classroom. Following this orientation, it is the successive interactions between a child's personality and the set of conditions in a classroom under which stimulation is offered which determine the forms of a child's behavior in a learning situation. It is important, therefore, that the social and cultural contextual patterns of learning in the classroom be understood and controlled.

In a general way, many teachers already recognize the validity of what we may call the developmental ecology of the learning process. They realize that constant scolding may produce as much mischief-making as it eliminates, that praise for effort and accomplishment generally results in continued achievement. They are aware that a withdrawn child will often perform if given special attention or that an impulsive child whose energies are not channeled can disrupt an entire group. But these notions, even when applied by sensitive and understanding teachers between moments of harassment under the mass conditions of ghetto schools, do not begin to encompass the total social framework of the teaching-learning situation.

Similarly, research investigations on disadvantaged children at the early childhood level suggest that the potential power of this formulation is not widely understood. Results appear to be disappointing even in projects in which teaching conditions are a marked improvement over those prevailing in urban public schools—reduced class size, provision for guidance and professional personnel, and some definition of instructional aims. Even under such improved circumstances, the intellectual gains of disadvantaged children have not been large.[3,4,5,6] While initially encouraging—e.g., I.Q. gains of 10-15 points[3,4,5,6]—gains have often washed out[4] and slipped back[6] later in the program. In one carefully controlled experiment, two years of special stimulation produced no significant improvement of trained children over their controls.[7]

There are, of course, many interpretations which might be placed on these results which are, fortunately, preliminary. But, despite differences in certain details of their method, most current preschool programs for the disadvantaged do not have well-designed and systematic approaches to instruction. With the exception that today there is a greater awareness of the importance of concept learning, most programs either follow a traditional elementary school model or resemble a classical method of nursery school education. The approach tends to be either formal, mass-oriented, and bare of concepts, or diffuse and non-intellective, dominated by a socio-emotional, and sensori-motor, free-activity framework that makes it difficult to gain consistent control of a child's attention. Although lip service is now widely given to cognitive learning processes, few programs have systematically analyzed the ecology of developmental learning; that is, the total situational-developmental learning circumstances of the young child. Yet a developmental learning approach appears useful for designing learning programs for disadvantaged children.

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Developmental learning can be defined as the sequence of encounters between a child and the environmental stimulation he cumulatively experiences. It is concerned not only with the total present stimulation and social situation of a child but also with his past history. In both respects, developmental learning can be distinguished from traditional concepts of education.

To plan a program in which major sources of developmental cognitive learning are brought under control may not be as imposing a task as it might at first seem. There are, in fact, several evidential sources, some experimental, where a high degree of control over the forms and levels of stimulation has been exercised. And it is from these sources, as well as from empirical studies in longitudinal stimulation,[8] that I have drawn in developing a model of the conditions central to the design of effective programs in developmental learning. These sources[9,10,11,12] include certain classical longitudinal studies on infant and child learning[13,14,15] and retrospective reports on the developmental circumstances in which precocious children have been reared.[16] The accelerated cognitive development typical in these and my own investigations—both of which include studies on children from moderately disadvantaged backgrounds—is encouraging. It suggests that certain principles of program design, common in these studies, may prove useful in conceiving programs for all young children, regardless of biological potentials, particular personalities, social background, and individual cognitive styles and levels.

We may approach some of the principles involved in setting up a developmental learning program by describing them in the order in which we have found them to be most useful. We begin with a psychocognitive diagnosis of each child, a process which should be sustained on a continuing basis throughout the life of any program. At the introductory stage of program planning, however, the procedure takes a rather general form. It is assumed that, for all except the brightest preschool children, organized knowledge of any aspect of the world is limited. While young children have developed concepts, their concepts lack generality and abstraction and tend to be available principally in immediate situations of play and other activity. From this predominantly sensori-motor picture, described by Piaget[17] and partially verified by developmental research,[18] as well as by the ordinary experience of most nursery school teachers, stems much of the character of the identifiable learning conditions.

One of the most cogent principles is the importance of order and coherence in providing developmental stimulation. It is valuable to single out some content area of reality, such as plants, sea-life, housing or transportation, and to analyze such an area in terms of its conceptual structure. By this we mean that it is useful to identify major objects in the defined category and their major parts (stimulus units), the network and hierarchy of their interrelations, and to determine how the units function in a system as well as ecologically in relationship to other systems. There are, for example, various forms of land, air, and water transportation vehicles, constructed with forms designed to serve different functions. In turn, the units themselves can be defined in terms of part-whole relations and mechanisms. The entire process may be described as a structural, functional, and analytic approach to program designing for imparting to a child an organized picture of the world.

This same technique may be utilized in preparing programs for learning language systems—mathematics, music, reading, and spoken, verbal language itself. The question of which of many reality content structures or language systems are selected for presentation is partly a matter of setting value priorities; it is partly resolved by another principle central to the concept of developmental learning. The early incorporation of symbolic manipulation has been shown to be a powerful agent for advancing cognitive development.[9,10,11,12] By anchoring language processes in perceptual object-action relationships a child is able to keep close to the visible, tangible world he knows, yet is also moved gradually towards more general and abstract systems, which are needed for logical types of thinking.

Seen in this context, the question of which content area ought to be "covered" becomes less important. For the young child, the value of intensively cultivating a few reality contexts is emphasized by the leverage for inductive generalization and abstractive construction that only thorough familiarity with concrete detail can provide.

Integral to the process of steering a child through the intricacies of reality structures is the necessity of sequencing. The notion of arranging curricula in some order of difficulty is as old as the idea of a curriculum itself. But what may be merely easier or more convenient for adults and older children is probably indispensable for the young child. Lacking logical systems and categories to mentally represent the external world, a young child is unable to sort out and conceptualize the relevant features of a given problem or situation. He is, for example, less likely to identify the rudders of boats and front wheels of land vehicles in terms of a general common function. He is more likely to see the direct but different relations these components have with their medium, as a consequence of differences in specific mechanisms (i.e., wheels track on land and rudders alter the directional flow of water). He is more likely to arrive at these essential generalizations if the number of stimulus units and sets of relationships are presented to him very gradually on a step-by-step basis.

If a child is eventually to make significant abstract constructions, essential perceptual features and functions must be selected out and isolated from less important ones. He must be presented with a sequence of selected and arranged stimulus units and patterns at a speed adapted to his learning rate. In short, stimulation sequences must be paced. If complex concepts are presented too rapidly, a child will either turn his attention to something else or may experience anxiety and a sense of failure as he tries unsuccessfully to comprehend. On the other hand, too much repetition of what is simple, familiar, or both causes boredom and a consequent reduction in motivation. There is, in fact, experimental evidence from the studies of Earl,[19] Dember,[20] and Thomas[21] which indicates that children prefer and respond most readily to stimuli which are slightly more complex than the stimulus complexity levels with which they are most familiar and comfortable.

One of the most powerful secondary functions of stimulus pacing is the feedback it provides teachers; it furnishes them with a constant and running psychocognitive assessment of a child's developmental learning progress. By using as indices a child's task mastery and motivation, a teacher has a built-in method of deciding when to proceed to the next phase, when to review certain components, and even which components to review. Moreover, this assessment enables teachers to search for, observe, and become aware of learning paralysis at a given level.

Implicit in the orientation to learning as essentially a developmental problem is the utility of designing stimulation programs which fit all the important developmental characteristics of a child's early years. Learning tasks for young children should involve a child in active, physical manipulation of materials and should be set up as play-activity situations. Exposure to perceptual attributes and arrangements is best done not only through observation, but also through furnishing a child with discrimination, sorting, and construction tasks by means of which he comes to grips with the dimensions of conceptual structures. By finding all the "things with wheels" or "the vehicles which carry things (instead of people)," a child can learn concepts through physically defined problem-solving tasks. If, then, the tasks are presented as forms of play—suggesting that "he drive all the vehicles that make their own tracks to the repair shop"—the scene is set for a world of play in which the child becomes an actor.

It is, of course, not always necessary to define the play according to clear functional definitions. Especially when the process is complex (e.g., operation of a rudder), concern over whether a boat actually carries passengers or elephants is misplaced. Boundaries of meaning can extend rather widely and a child's interest can be greatly enhanced by assigning fanciful roles. A boat can be a fish or a sea monster or a ship full of gold. One fantasy leads to another. The process can in this manner become a form of incidental learning, with the restriction that the stimulus focus is, from time to time, defined in terms of relevance to a conceptual learning purpose intended by the program.

There are, of course, other important conditions to be considered in designing developmental learning programs, but they are too numerous to more than touch on here. Given the characteristics which a disadvantaged child may often bring to a classroom situation, however, one additional set of conditions—the social psychological setting—may assume particular importance. Teaching attitudes and techniques which define social relations, not only between teacher and child but also between child and child, on a cooperative basis seem especially significant. To this end, it is effective to set up small group learning situations. Repeated demonstrations, in novel and dramatic forms, have proved far more valuable than verbal corrections of error. This method of learning through observing models (imitation) and experimenting with tasks is preferable to explaining with words alone, where problems of resistance to authority often arise. Groups should be small enough to permit sustained individualization of program pacing, yet large enough to permit benefit to be reaped from the interest aroused through a child's identifying and interacting with a peer reference group. Tasks can be arranged in ways which require collaboration for solution in order to develop cooperative rather than competitive styles among the children.

Given the present teacher shortage and the urgency of the need, it is an interesting question whether so complex a set of skills can be found or developed in many teachers. There are two considerations which suggest that the problem may not be insuperable. The first of these suggests a shift of focus to the school principal. The principal needs to become the intellectual as well as the administrative leader of the school. The second suggests that under the supervision of a master teacher, individuals with little formal education may be able to facilitate cognitive developmental learning in the early years of life. There is growing evidence to support this view. In a series of investigations at the University of Chicago Laboratory Nursery School, teachers with varying backgrounds in elementary and nursery school education were, with few exceptions, able to learn and apply the essential principles of developmental learning outlined in this article.[22,23,24] Programs were conducted with children from both advantaged and disadvantaged backgrounds. Several of the teachers who were most successful in teaching three- and four-year-olds had never acquired a college degree.

Similarly, observations which I have made recently of child care and nursery school facilities for children of working mothers in Warsaw, Poland, indicate that stimulating programs can be implemented on a widespread basis with minimally trained teachers. The central ingredient in both programs is the continuing function of highly educated teacher-guides—developmental or education psychologists—who know principles of developmental learning and provide written guides and frequent demonstrations for and discussions with teachers. The economics of expanding or supplementing the limited administrative functions now applied to the role of the principal suggest a potentially powerful vehicle to gain more control over the developmental learning ecology of disadvantaged preschool children.

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